

PEST (COMMON NAME): EXTREME DROUGHT/MAY - JULY

(SPECIFIC NAME): CLIMATIUS ARIDEN!

HOST: ALL DROUGHT SUSCEPTIBLE PLANTS AND PLANT GROWTH STAGES

PRESENT CONDITION:

AREA (TOTAL ACRES): N.A.

LOCATION: Michigan's U.P.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR % ESTIMATES):

Oak decline and scattered individual trees and pockets of oak mortality. Weakly foliated aspen in the Eastern U.P. with unknown future impacts from roots diseases and secondary insects. Some ips mortality in jack pine but not nearly the loss experienced in other areas of the Lake State.

TREND:

PAST TO PRESENT: Droughts in 1976, 1983-84 and 1988.

FUTURE: Drought conditions in the next two years could have severe and far reaching negative impacts - especially on the oak and aspen resource.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

1988 PEST CONDITIONS REPORT

PEST (COMMON NAME): OAK WILT

(SPECIFIC NAME): CERATOCYSTIS FAGACEARUM

HOST: OAKS

PRESENT CONDITION:

AREA (TOTAL ACRES): 10,000 ACRES

LOCATION: SHAKEY LAKES AREA, MENOMINEE COUNTY

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

Over 3,000 trees lost to date. Many of these with values as landscape trees. Without control program, would lose most of this oak resource.

TREND:

PAST TO PRESENT: Detected in 1981. Likely introduced into the area in early 1950's. Greatest loss of trees in later years as epicenters increased in number and size. Control efforts began in 1982. Of the 236 detected epicenters, all but 30 have vibratory plow lines established to stop root graft transmission. Only 7 newly established epicenters in 1988. All epicenters have undergone or are undergoing sanitation to remove inoculum to prevent over land spread of the disease.

FUTURE: All untreated epicenters will have vibratory plow lines established in 1989. Sanitation efforts have greatly reduced inoculum load, with benefits of reduced overland spread of disease demonstrated in 1988 with only 7 new epicenters. We hope to eventually eliminate the disease from this area.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

The project is underfunded at \$20,000 a year. This pays for a week of vibratory plowing; a full time seasonal employee living in area to detect new epicenters and follow up on reports, map new centers, mark trees for removal, lay out plow lines, and handle public relations aimed at educating the residents and public to stop the spread of oak wilt via wounding and movement of inoculum; and the part time involvement of a forest pathologist from Michigan Technological University, Houghton, MI.

COMMENTS: Actually, 65 more epicenters were detected in 1980 due to the first large scale photography made available by the U.S.F.S., S&PF, St. Paul, MN. However, only 7 of these were newly established centers. We feel we have thoroughly covered this diverse 10,000 acre tract of oak forest. Escapes of epicenters from the plow lines are rare. Chances for overland spread are greatly reduced by our sanitation program. We are guardedly optimistic about our chances of eliminating this disease.

PEST (COMMON NAME): OAK DECLINE TWO LINED CHESTNUT BORER
ARMELLARIA
Drought

(SPECIFIC NAME): *Agrilus bilineatus*
Armellaria mellea

HOST: RED OAK

PRESENT CONDITION:

AREA (TOTAL ACRES): SCATTERED POCKETS AND SINGLE TREES

LOCATION: MICHIGAN'S UPPER PENINSULA

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

TREND:

PAST TO PRESENT: Oak decline and eventual tree mortality is an expected consequence of drought stress. The two-lined chestnut borer and/or armellaria root rot are usually associated with this condition. This year's drought was extreme. We lost large pockets of oaks (10-30 trees) in some areas.

FUTURE: We will lose oaks from this drought and associated secondary agents for the next year or two.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Salvage of severely declining oaks is recommended.

PEST (COMMON NAME): SCLERODERRIS CANKER - LAKE STATES STRAIN

(SPECIFIC NAME): *Gremmeniella abietina* or *lagerbergii*

HOST: RED, JACK & SCOTTS PINE

PRESENT CONDITION:

AREA (TOTAL ACRES): NEGLIGIBLE

LOCATION: LUCE & MARQUETTE COUNTIES

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

FEW, SCATTERED POCKETS OF LIGHT FLAGGING ON LOWER
WHORLS

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

NONE

TREND:

PAST TO PRESENT:

TWELVE YEARS SINCE SIGNIFIANT TREE MORTALITY IN
YOUNG PLANTATIONS.

FUTURE:

UNKNOWN

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

PEST (COMMON NAME): GYPSY MOTH

(SPECIFIC NAME): LYMANTRIA DISPAR

HOST: OAKS, ASPEN, TREES IN GENERAL

PRESENT CONDITION:

AREA (TOTAL ACRES):

LOCATION: CHIPPEWA, MACKINAC & MENOMINEE COUNTIES

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

No defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

N.A.

TREND:

PAST TO PRESENT: Moths detected in increasing numbers the last two years. Many moths caught east of I-75 and within a 50 mile radius of the Mackinac Bridge in the U.P.

The first "established" population detected in the U.P. was found in Menominee County. Many egg masses were found in an area north of Menominee on the Menominee River.

FUTURE: Heavily infested Lower Peninsula provides many opportunities for movement of life stages into the U.P. This pressure will not diminish. The potential for gypsy moth defoliation will be tested in the U.P. in the next few years. The predominate aspen type in the Eastern U.P. and the oak area of Menominee County offer the most opportunity for successful infestation. The rest of the U.P. is northern hardwoods with scattered aspen stands.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Attempts will be made to eradicate the Menominee County infestation. The success or failure of this effort will guide future endeavors. Public education and forest management which embrace basic IPM practices will play a major role.

PEST (COMMON NAME): FOREST TENT CATERPILLAR

(SPECIFIC NAME): MALACOSOMA DISSTRIA

HOST: ASPEN, MAPLE, OAK

PRESENT CONDITION:

AREA (TOTAL ACRES): 316,000

LOCATION: MICHIGAN'S UPPER PENINSULA

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

(See attached Map and Table)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

TREND:

PAST TO PRESENT: Second year of building epidemic.
Spread to Eastern U.P. in 1988.

FUTURE: Expect at least one more year of widespread
severe defoliation throughout the U.P.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: No spray programs to date. Drought in 1988 has
complicated impacts. Many aspen in the Eastern U.P. only
weakly refushed.

1988 Forest Tent Caterpillar Defoliation
Michigan's Upper Peninsula

County	Defoliation Class	Acres
Alger	Light	1,700
	Moderate	3,840
	Heavy	5,860
Baraga	Moderate	640
Chippewa	Light	5,760
	Moderate	100,000
	Heavy	60,000
Delta	Light	20,400
	Moderate	3,840
Dickinson	Light	3,240
	Moderate	16,310
	Heavy	1,720
Houghton	Moderate	2,560
Keweenaw	Moderate	000
Luce	Light	5,120
	Moderate	1,280
	Heavy	640
Mackinac	Light	40,040
	Moderate	13,720
	Heavy	12,160
Marquette	Light	2,560
	Moderate	6,400
	Heavy	3,200
Menominee	Moderate	1,320
	Heavy	1,000
Ontonagon	Light	5,120
Schoolcraft	Light	5,000
	Moderate	3,360
	Heavy	1,920

Totals: Light = 90,300; Moderate = 154,070; Heavy = 86,500
Total Defoliation = 330,870

PEST (COMMON NAME): BRUCE SPANWORM

(SPECIFIC NAME): OPEROPHTERA BRUCEASA

HOST: Sugar Maple, Beech, Yellow Birch & Basswood

PRESENT CONDITION:

AREA (TOTAL ACRES): 5,840

LOCATION: Dickenson, Delta, Iron & Marquette Counties

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

(See Attached Table)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

TREND:

PAST TO PRESENT: Fourth year of Defoliation in Iron
County. 2nd or 3rd year in other
counties.

FUTURE: If caterpillar follows historic cycles,
populations should collapse in next year
or two.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: No perceptible impact on tree growth and mortality.

1988 Bruce Spanworm and Other Loopers Defoliation
Michigan's Upper Peninsula

<u>County</u>	<u>Defoliation Class</u>	<u>Acres</u>
Dickinson	Light	640
Delta	Moderate	3,200
Iron	Light	1,280
	Heavy	160
Marquette	Heavy	480

Totals: Light = 1,920; Moderate = 3,200; Heavy = 640
Total defoliation = 5,760

1988 PEST CONDITIONS REPORT

PEST (COMMON NAME): Orangehumped Mapleworm

(SPECIFIC NAME): Symmerista leucitys

HOST: Sugar Maple

PRESENT CONDITION:

AREA (TOTAL ACRES): 100 acres

LOCATION: Chippewa County

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

100 acres of moderate to heavy defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

NONE

TREND:

PAST TO PRESENT:

YEAR	COMPARATIVE DEFOLIATION	
	DEFOLIATION	ACRES
1985	LIGHT	240
	MODERATE	1360
	HEAVY	5340
1986	MOD/HVY	2420
1987	HEAVY	730
1988	MOD/HVY	100

FUTURE: Population collapse is eminent.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

PEST (COMMON NAME): REDHEAD PINE SAWFLY

(SPECIFIC NAME): NEODIPRION LECONTEI

HOST: RED PINE, JACK PINE

PRESENT CONDITION:

AREA (TOTAL ACRES): 20 acres

LOCATION: Luce county

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

20 acres with pockets of heavy defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

Only a few trees lost on more stressed soils

TREND:

PAST TO PRESENT: Sawfly populations are down from the
previous 3 years.

FUTURE: Will continue to have sawfly problems where
conditions such as vegetative competition
and poor soils cause stress in young
plantations.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

Malathion was used in a solo back pack
sprayer. Control costs were \$10/ac.

COMMENTS:

PEST (COMMON NAME): YELLOWHEADED SPRUCE SAWFLY

(SPECIFIC NAME): PIKONEMA ALASKENSIS

HOST: SPRUCE

PRESENT CONDITION:

AREA (TOTAL ACRES): UNKNOWN

LOCATION: HOUGHTON, KEEWENAW, ONTONAGON & BARAGA COUNTIES

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

ORNAMENTAL SPRUCES TOTALLY DEFOLIATED

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

Plantation spruce not grown in these areas.
Losses of many ornamental and open grown
smaller trees in some areas.

TREND:

PAST TO PRESENT: This was the third year of
significant defoliation in these areas.

FUTURE: Unknown. Expect collapse in next year or two
if historic cycle is repeated.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

PEST (COMMON NAME): JACK PINE BUDWORM

(SPECIFIC NAME): CHORISTONEURA PINUS PINUS

HOST: JACK PINE

PRESENT CONDITION:

AREA (TOTAL ACRES): 1,087 acres

LOCATION: Alger, Baraga, Chippewa, Luce, Marquette &
Schoolcraft Counties

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

Acres of Moderate Defoliation

<u>County</u>	<u>Acres</u>
Alger	80
Baraga	503
Chippewa	3
Luce	303
Marquette	86
Schoolcraft	112
Total	1087

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

Some top kill in trees in Luce County. Trees
were harvested in prescribed presalvage.

TREND:

PAST TO PRESENT: Moderate defoliation in Baraga and Luce
counties for last 2-3 years. First year of
outbreak expansion to other counties.

FUTURE: Could see major expansion of outbreak in
1989.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS:

1988 PEST CONDITIONS REPORT

PEST (COMMON NAME): SPRUCE BUDWORM

(SPECIFIC NAME): CHORISTONEURA FUMIFERANA

HOST: WHITE SPRUCE, BALSAM FIR

PRESENT CONDITION:

AREA (TOTAL ACRES): Negligible

LOCATION: MICHIGAN'S UPPER PENINSULA

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY
DEFOLIATION OR INFECTION; DEFINE CLASSES):

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME
AND/OR \$ ESTIMATES):

TREND:

PAST TO PRESENT: Last epidemic ended started in the
late 1960's and ended in 1985.

FUTURE: No wide-scale outbreak expected until next
century.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

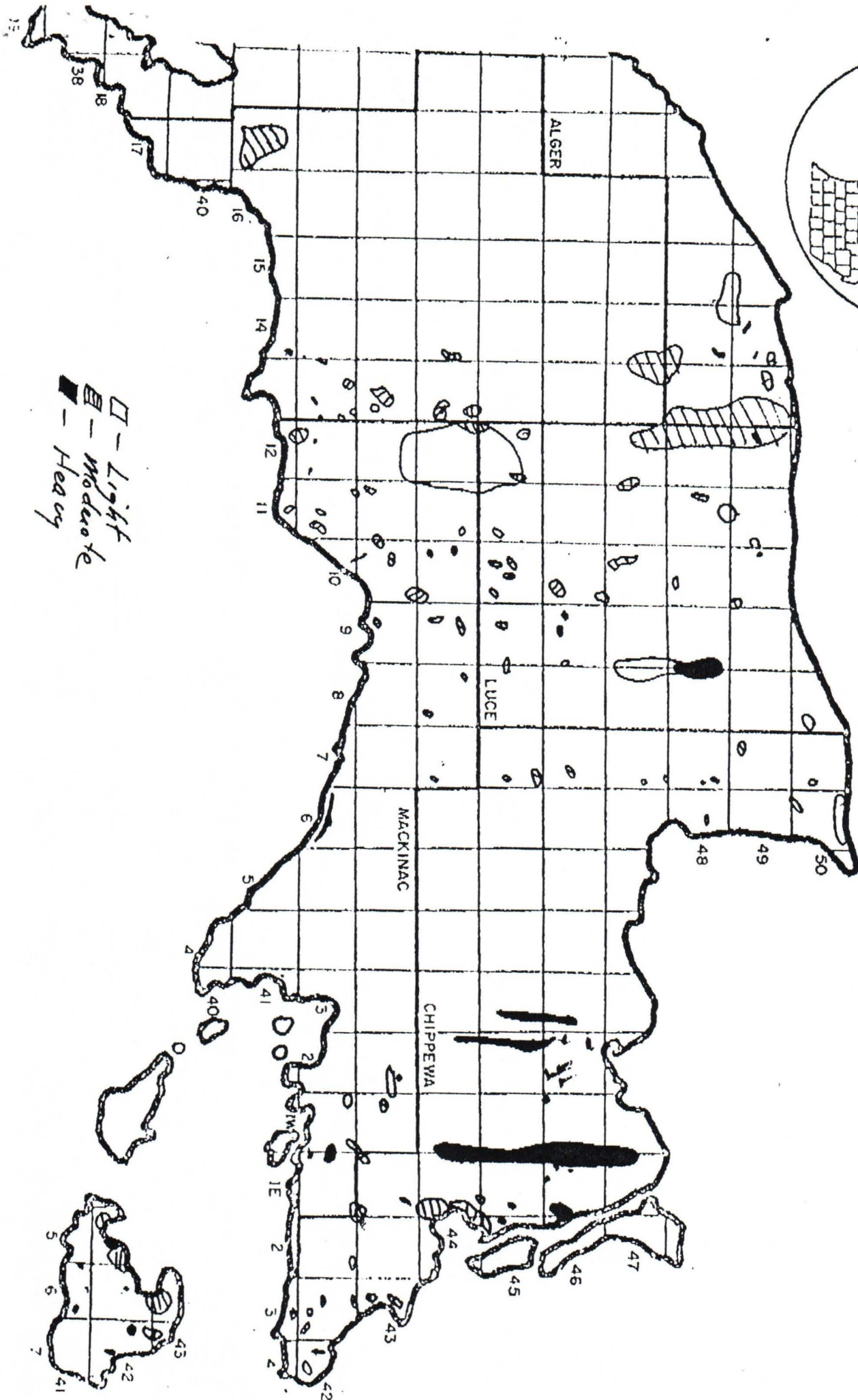
COMMENTS: Now is the time to reduce stand ages to 50 years or
less; to begin regulating the mixture of age
classes to reduce the area of single age stands;
to encourage the spruce component of regenerated
stands to reduce risk; or convert balsam fir stand
to other species to break up large contiguous
areas of balsam fir.

Pest Conditions Report - Minor Pest Problems
Michigan's Upper Peninsula
1988

PEST	HOST(S)	COUNTIES	REMARKS
Aphids	!Jack Pine !Scotts Pine	!Michigan's !Upper Peninsula	!Commonly present in young jack !pine stands before crown closure. !Occasional heavy populations !causing wilt symptoms in !individual trees.
Aspen Blotch Miner (Lithocolletis treauloidiella)	!Quaking Aspen	!Michigan's !Upper Peninsula	!Damage noticeable, but not !heavy in most areas.
Armellaria (Armellaria mellea)	!Jack Pine	!Michigan's !Upper Peninsula	!Scattered mortality in young !pine plantations.
Birch Leafminer (Fenusa pusilla)	!White or Paper Birch!	!Michigan's !Upper Peninsula	!Locally heavy populations
Eastern Tent Caterpillar (Malacosoma americanum)	!Prunus sp. !Malus sp.	!Michigan's !Upper Peninsula	!Extremely heavy populations !producing unsightly roadsides. !Especially bad in Southern U.P.
Fall Cankernorm (Alsophila poenataria)	!Sugar Maple !Other Hardwoods	!Michigan's !Upper Peninsula	!Moderate defoliation of hardwoods !and aspen across the U.P. !Associated with the linden looper !and Bruce spanworm.
Gall Rusts (Cronartium quercuum)	!Jack Pine !Scotts Pine	!Michigan's !Upper Peninsula	!Common in jack pine areas.

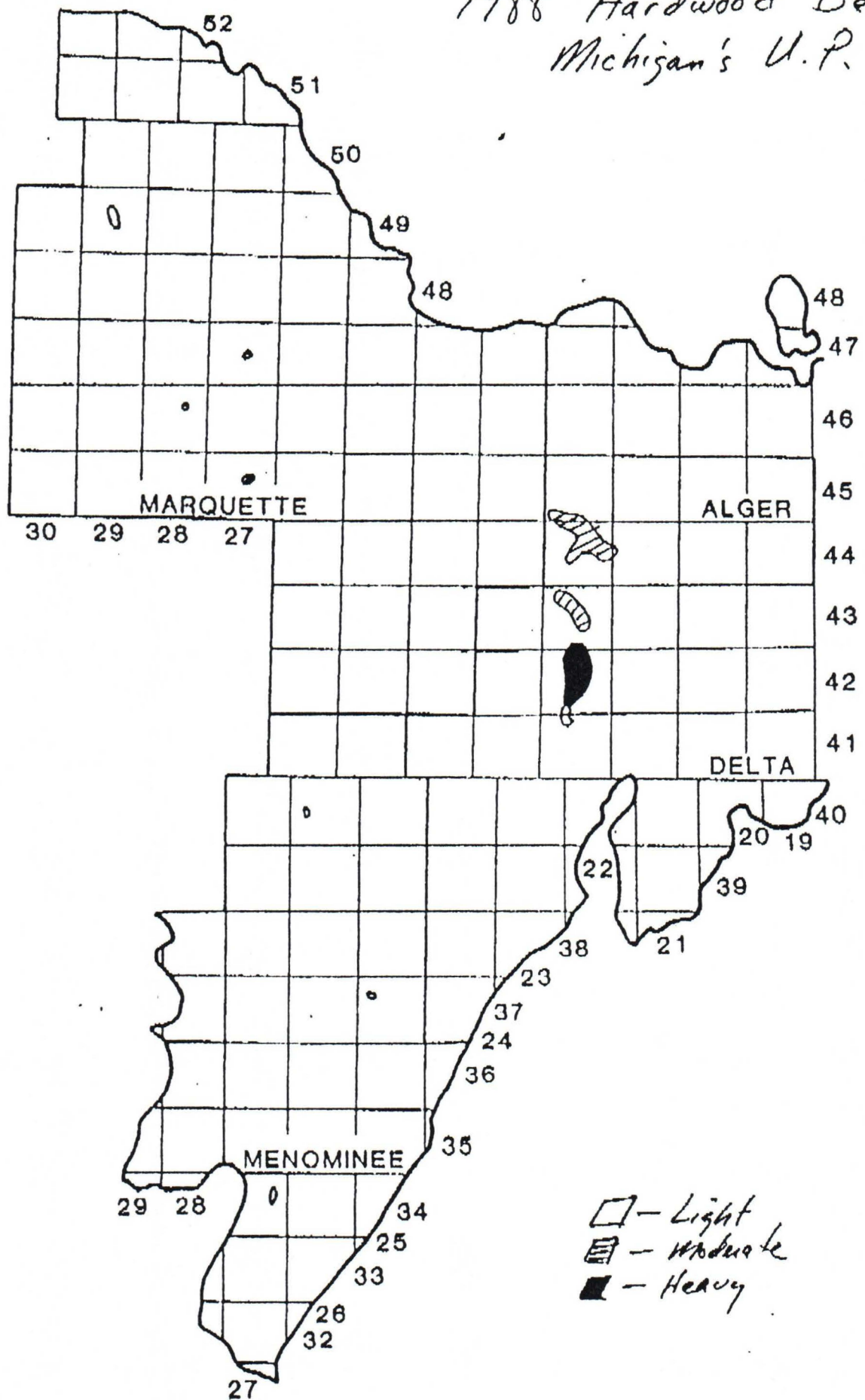
Hypoxylon Canker (Hypoxylon mammatum)	Quaking Aspen	Michigan's Upper Peninsula	Found commonly throughout the U.P. Where heavy, severely limits the grow of aspen.
Large Aspen Tortrix (Choristoneura conflictana)	Quaking Aspen	Michigan's Upper Peninsula	Especially noticeable in Eastern U.P. in areas defoliated by the Forest Tent Caterpillar. Aspen subject to many stressing factors including a record setting drought.
Linden Looper (Erannia tiliaria)	Maple Basswood	Michigan's Upper Peninsula	Moderate defoliation in hardwood lands across the U.P. Occurred with Bruce spanworm and fall cankerworm.
Maple Decline	Sugar Maple Red Maple	Michigan's Upper Peninsula	Continuing problem in urban areas.
		Upper Peninsula	in some areas recovering from severe drought conditions experienced in 1983 and the spring of 1984 & 87 and the summer of 88
Orange-Humped Mapleworm (Symmerista leucitys)	Sugar Maple Beech	Chippewa	Heavy defoliation for the 6th year in the McNearney Lake Area. Less than 100 acres defoliated. Continue to expect population collapse.
Pine Root Collar Weevil (Hylobius radicus)	Scotts Pine	Michigan's Upper Peninsula	Limits the utility of scotts pine as an economically viable candidate for reforestation efforts in the Upper Peninsula.
Pitch Midge (Ceratomyia sp.)	Jack Pine	Michigan's Upper Peninsula	Scattered areas with numerous flagged branchlets.

Pitch Nodule Maker (Patrova albicapitana)	Jack Pine Scotts Pine	Michigan's Upper peninsula	Commonly found in low numbers. Few areas with unusually high occurrence.
Red Pine Needle Midge (Contarinia sp.)	Red Pine Scotts Pine	Delta, Dickinson, Iron, Marquette Mackinac	No reported or observed attacks.
Red-Headed Pine Sawfly (Neodiprion lecontei)	Jack Pine Red Pine	Luce	One plantation in Luce Co. had a small sawfly pocket sprayed. Population down from last year.
Scleroderris Canker (Gremmeniella abietina)	Jack Pine Red Pine	Luce, Schoolcraft	Light flagging of lower whorl branchlets in few isolated pockets.
Two-Leaf Tier Moth (Enargia Decolor)	Aspen	Michigan's Upper Peninsula	Few moths observed in gypsy moth traps compared to previous years.
White Grubs (Phyllophaga sp.)	Jack Pine Red Pine	Michigan's Upper Peninsula	White grubs continue to be a problem on old field type planting sites.
White Pine Weevil (Pissodes strobi)	Jack Pine	Baraga Marquette	Two plantations in Marquette county with 9-10% weeviling. One planting on the Baraga Plains with 40% weeviling.
White Trunk Rot of Aspen (Phellinus tremulae)	Quaking Aspen	Michigan's Upper Peninsula	A large portion of our aspen resource is mature or overmature and in need of harvesting.



□ - Light
▨ - Moderate
■ - Heavy

1988 Hardwood Defoliation
Michigan's U.P. (P20)



1988 Handwood Defoliation
Michigan's U.P.

